We claim:

1. A composition for transfecting a eukaryotic cell which comprises a peptide-nucleic acid complex and a cationic lipid capable of aggregating said peptide-nucleic acid complex.

2. The composition of claim 1 wherein said peptide is a fusagenic peptide or a nuclear localization signal sequence.

3. The composition of claim 2 wherein said fusagenic peptide is a peptide of a viral fusagenic protein.

4. The composition of claim 3 wherein said viral fusagenic protein is derived from a virus selected from the group consisting of an influenza virus, a vesicular stomatitis virus and an alphavirus.

5. The composition of claim 3 wherein said viral fusagenic protein is a hemagglutinin of an influenza virus or a glycoprotein of a vesicular stomatitis virus.

6. The composition of claim 5 wherein said viral fusagenic peptide is an amphiphilic peptide of a hemagglutinin of an influenza virus.

7. The composition of claim 6 wherein said amphiphilic peptide is a K5 peptide or an E5 peptide of a hemagglutinin.

8. The composition of claim 2 wherein said nuclear localization signal sequence is derived from a simian virus 40.

9. The composition of claim 2 wherein said nuclear localization signal sequence is derived from the SV40 large T antigen.

10. The composition of claim 1 wherein said peptide is poly-L-lysine.

11. The composition of claim 1 wherein said cationic lipid is a polyvalent cationic lipid.

12. The composition of claim 11 wherein said polyvalent cationic lipid is 2,3-dioleyloxy-N-[2(sperminecarboxamido)ethyl]-N,N-dimethyl-1-propanaminium trifluoroacetate.

13. The composition of claim 1 further comprising a neutral lipid.

14. The composition of claim 13 wherein said neutral lipid is dioleoylphosphatidylethanolamine.

15. The composition of claim 13 which is capable of transfecting an animal primary cell line.

16. The composition of claim 13 which is capable of transfecting a human primary cell line.

17. The composition of claim 13 which is capable of transfecting a fibroblast.

18. A composition for transfecting a eukaryotic cell which comprises a peptide-nucleic acid complex, wherein said peptide is conjugated to a DNA binding group, and a cationic lipid capable of aggregating said peptide-nucleic acid complex.

19. The composition of claim 18 wherein said peptide is a fusagenic peptide or a modified nuclear localization signal sequence.

20. The composition of claim 19 wherein said fusagenic peptide is a peptide of a viral fusagenic protein.

21. The composition of claim 20 wherein said viral fusagenic protein is derived from a virus selected from the group consisting of an influenza virus, a vesicular stomatitis virus and an alphavirus.

22. The composition of claim 20 wherein said viral fusagenic protein is a hemagglutinin of an influenza virus or a glycoprotein of a vesicular stomatitis virus.

23. The composition of claim 20 wherein said viral fusagenic peptide is an amphiphilic peptide of a hemagglutinin of an influenza virus.

24. The composition of claim 23 wherein said amphiphilic peptide is a K5 peptide or an E5 peptide of a hemagglutinin.

25. The composition of claim 19 wherein said nuclear localization signal sequence is derived from a simian virus 40.

26. The composition of claim 19 wherein said nuclear localization signal sequence is derived from the SV40 large T antigen.

27. The composition of claim 18 wherein said peptide is poly-L-lysine.

28. The composition of claim 18 wherein said DNA binding group is selected from the group consisting of proteins, peptides, polypeptides and polyamines.

29. The composition of claim 18 wherein said DNA binding group is a polyamine.

30. The composition of claim 29 wherein said polyamine is spermine.

31. The composition of claim 18 wherein said DNA binding group is capable of forming a noncovalent association with the nucleic acid.

32. The composition of claim 31 wherein said noncovalent association is selected from the group consisting of hydrogen bonds, salt bridges, van der Waals forces and conformational interactions.

33. The composition of claim 18 wherein said cationic lipid is a polyvalent cationic lipid.

34. The composition of claim 33 wherein said polyvalent cationic lipid is 2,3-dioleyloxy-N-[2(sperminecarboxamido)ethyl]-N,N-dimethyl-1-propanaminium trifluoroacetate.

35. The composition of claim 18 further comprising a neutral lipid.

36. The composition of claim 35 wherein said neutral lipid is dioleoylphosphatidylethanolamine.

37. A method for transfecting a eukaryotic cell with a nucleic acid which comprises contacting said cell with the transfection composition of claim 1.

38. A method for transfecting a eukaryotic cell with a nucleic acid, said method comprising the steps of:

(a) admixing a peptide with a nucleic acid to form a peptide-nucleic acid complex;

(b) adding cationic lipid to the complex from step (a) to obtain a cationic lipid aggregate comprising said peptide-nucleic acid complex; and

(c) contacting said eukaryotic cell with the cationic lipid aggregate from step (b).

39. The method of claim 38 wherein said peptide is a fusagenic peptide or a nuclear localization signal sequence.

40. The method of claim 39 wherein said fusagenic peptide is a peptide of a viral protein derived from a virus selected from the group consisting of an influenza virus, a vesicular stomatitis virus and an alphavirus.

41. The method of claim 40 wherein said viral fusagenic protein is a hemagglutinin of an influenza virus or a glycoprotein of a vesicular stomatitis virus.

42. The method of claim 41 wherein said viral fusagenic peptide is an amphiphilic peptide of a hemagglutinin of an influenza virus.

43. The method of claim 42 wherein said amphiphilic peptide is a K5 peptide or an E5 peptide of a hemagglutinin.

44. The method of claim 39 wherein said nuclear localization signal sequence is derived from a simian virus 40.

45. The method of claim 39 wherein said nuclear localization signal sequence is derived from the SV40 large T antigen.

46. The method of claim 38 wherein said peptide is poly-L-lysine.

47. The method of claim 38 wherein said peptide is conjugated to a DNA binding group.

48. The method of claim 47 wherein said DNA binding group is a polyamine.

49. The method of claim 48 wherein said polyamine is spermine.

50. The method of claim 38 wherein said cationic lipid is a polyvalent cationic lipid.

51. The method of claim 50 wherein said polyvalent cationic lipid is 2,3-dioleyloxy-N-[2(sperminecarboxamido)ethyl]-N,N-dimethyl-1-propanaminium trifluoroacetate.

52. The method of claim 38 further comprising a neutral lipid.

53. The method of claim 52 wherein said neutral lipid is dioleoylphosphatidylethanolamine.

54. The method of claim 53 wherein said eukaryotic cell is an animal primary cell line.

55. The method of claim 53 wherein said eukaryotic cell is a human primary cell line.

56. The method of claim 53 wherein said eukaryotic cell is a fibroblast.